



# SEQUENCE LISTING

<110> Sierkstra, Laurens Nicolaas  
Klugkist, Jan  
Markvardsen, Peter  
Von der Osten, Claus  
Bauditz, Peter

<120> Protease Variants and Compositions

<130> 4322.230-US

<160> 41

<170> PatentIn version 3.3

<210> 1

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 1

aattcaggtg caggctcaat cagctatccg gcgctctat

39

<210> 2

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 2

gtccacgtcc gagttagtcg ataggccgcg agatacgctt g

41

<210> 3

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 3

aattcaggtg caggctcaat cagctatccg gcgatctat

39

<210> 4

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 4

gtccacgtcc gagttagtcg ataggccgct agatacgctt g

41

<210> 5

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 5

agctttgtac caggggaacc gccgactcaa gatggg

36

<210> 6

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 6

aacatggtcc ccttggcggc tgagttctac ccttaccc

38

<210> 7

<211> 275

<212> PRT

<213> Bacillus amyloliquefaciens

<400> 7

Ala Gln Ser Val Pro Tyr Gly Val Ser Gln Ile Lys Ala Pro Ala Leu  
1 5 10 15

His Ser Gln Gly Tyr Thr Gly Ser Asn Val Lys Val Ala Val Ile Asp  
20 25 30

Ser Gly Ile Asp Ser Ser His Pro Asp Leu Lys Val Ala Gly Gly Ala  
35 40 45

Ser Met Val Pro Ser Glu Thr Asn Pro Phe Gln Asp Asn Asn Ser His  
50 55 60

Gly Thr His Val Ala Gly Thr Val Ala Ala Leu Asn Asn Ser Ile Gly  
65 70 75 80

Val Leu Gly Val Ala Pro Ser Ala Ser Leu Tyr Ala Val Lys Val Leu  
85 90 95

Gly Ala Asp Gly Ser Gly Gln Tyr Ser Trp Ile Ile Asn Gly Ile Glu  
100 105 110

Trp Ala Ile Ala Asn Asn Met Asp Val Ile Asn Met Ser Leu Gly Gly  
115 120 125

Pro Ser Gly Ser Ala Ala Leu Lys Ala Ala Val Asp Lys Ala Val Ala  
130 135 140

Ser Gly Val Val Val Val Ala Ala Ala Gly Asn Glu Gly Thr Ser Gly  
145 150 155 160

Ser Ser Ser Thr Val Gly Tyr Pro Gly Lys Tyr Pro Ser Val Ile Ala  
165 170 175

Val Gly Ala Val Asp Ser Ser Asn Gln Arg Ala Ser Phe Ser Ser Val  
180 185 190

Gly Pro Glu Leu Asp Val Met Ala Pro Gly Val Ser Ile Gln Ser Thr  
195 200 205

Leu Pro Gly Asn Lys Tyr Gly Ala Tyr Asn Gly Thr Ser Met Ala Ser  
210 215 220

Pro His Val Ala Gly Ala Ala Ala Leu Ile Leu Ser Lys His Pro Asn  
225 230 235 240

Trp Thr Asn Thr Gln Val Arg Ser Ser Leu Glu Asn Thr Thr Thr Lys  
245 250 255

Leu Gly Asp Ser Phe Tyr Tyr Gly Lys Gly Leu Ile Asn Val Gln Ala  
260 265 270

Ala Ala Gln  
275

<210> 8  
<211> 49  
<212> PRT  
<213> Bacillus

<400> 8

Gly Gly Pro Thr Gly Ser Thr Ala Leu Lys Thr Val Val Asp Lys Ala  
1 5 10 15

Val Ser Ser Glu Gly Ser Ser Gly Ser Thr Ser Thr Val Gly Tyr Pro  
20 25 30

Ala Lys Tyr Pro Phe Ser Ser Ala Gly Ser Glu Leu Asp Val Met Ala  
35 40 45

Pro

<210> 9

<211> 49

<212> PRT

<213> Bacillus subtilis DY

<400> 9

Gly Gly Pro Ser Gly Ser Thr Ala Leu Lys Gln Ala Val Asp Lys Ala  
1 5 10 15

Tyr Ala Ser Ser Cys Ser Ser Gly Ser Gln Asn Thr Ile Gly Tyr Pro  
20 25 30

Ala Lys Tyr Asp Phe Ser Ser Val Gly Ala Glu Leu Glu Val Met Ala  
35 40 45

Pro

<210> 10

<211> 49

<212> PRT

<213> Bacillus licheniformis

<400> 10

Gly Gly Pro Ser Gly Ser Thr Ala Met Lys Gln Ala Val Asp Asn Ala  
1 5 10 15

Tyr Ala Arg Ser Gly Ser Ser Gly Asn Thr Asn Thr Ile Gly Tyr Pro  
20 25 30

Ala Lys Tyr Asp Phe Ser Ser Val Gly Ala Glu Leu Glu Val Met Ala  
35 40 45

Pro

<210> 11  
<211> 45  
<212> PRT  
<213> Bacillus alcalophilus PB92

<400> 11

Gly Ser Pro Ser Pro Ser Ala Thr Leu Glu Gln Ala Val Asn Ser Ala  
1 5 10 15

Thr Ser Arg Ser Gly Ala Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala  
20 25 30

Phe Ser Gln Tyr Gly Ala Gly Leu Asp Ile Val Ala Pro  
35 40 45

<210> 12  
<211> 45  
<212> PRT  
<213> Bacillus YaB

<400> 12

Gly Ser Ser Ala Gly Ser Ala Thr Met Glu Gln Ala Val Asn Gln Ala  
1 5 10 15

Thr Ala Ser Ser Cys Ala Gly Asn Val Gly Phe Pro Ala Arg Tyr Lys  
20 25 30

Phe Ser Gln Tyr Gly Ala Gly Leu Asp Ile Val Ala Pro  
35 40 45

<210> 13  
<211> 45  
<212> PRT  
<213> Bacillus lentus

<400> 13

Gly Ser Thr Ser Gly Ser Ser Thr Leu Glu Leu Ala Val Asn Arg Ala  
1 5 10 15

Asn Asn Ala Thr Gly Arg Gln Gly Val Asn Tyr Pro Ala Arg Tyr Ser  
 20 25 30

Phe Ser Thr Tyr Gly Pro Glu Ile Glu Ile Ser Ala Pro  
 35 40 45

<210> 14  
 <211> 46  
 <212> PRT  
 <213> Bacillus subtilis 168

<400> 14

Gly Thr Thr Ser Asp Ser Lys Ile Leu His Asp Ala Val Asn Lys Ala  
 1 5 10 15

Tyr Glu Gln Asp Gly Asn Gly Lys Pro Val Asn Tyr Pro Ala Ala Tyr  
 20 25 30

Ser Phe Ser Thr Thr Gly Asp Glu Val Glu Phe Ser Ala Pro  
 35 40 45

<210> 15  
 <211> 50  
 <212> PRT  
 <213> Bacillus subtilis IFO3013

<400> 15

Gly Gly Pro Ser Asp Val Pro Glu Leu Glu Glu Ala Val Lys Asn Ala  
 1 5 10 15

Val Lys Asn Glu Gly Asp Gly Asp Glu Arg Thr Glu Glu Leu Ser Tyr  
 20 25 30

Pro Lys Ala Tyr Asn Phe Ser Asn Ala Asn Lys Glu Ile Asp Leu Val  
 35 40 45

Ala Pro  
 50

<210> 16  
 <211> 45  
 <212> PRT  
 <213> Thermoactinomyces vulgaris

<400> 16

Gly Gly Thr Val Gly Asn Ser Gly Leu Gln Gln Ala Val Asn Tyr Ala  
 1 5 10 15

Trp Asn Lys Ala Gly Asn Thr Ala Pro Asn Tyr Pro Ala Tyr Tyr Ser  
 20 25 30

Phe Ser Thr Tyr Gly Ser Trp Val Asp Val Ala Ala Pro  
 35 40 45

<210> 17  
 <211> 47  
 <212> PRT  
 <213> Dichelobacter nodosus

<400> 17

Gly Gly Gly Gly Gly Cys Ser Gln Asn Ser Gln Arg Met Ile Asp Lys  
 1 5 10 15

Thr Thr Asn Leu Glu Asn Gln Asp Ala Ser Arg Thr Trp Pro Ser Ser  
 20 25 30

Cys Asn Phe Ser Asn Tyr Gly Ala Arg Val His Leu Ala Ala Pro  
 35 40 45

<210> 18  
 <211> 47  
 <212> PRT  
 <213> Xanthomonas campestris

<400> 18

Gly Gly Gly Gly Ser Cys Ser Thr Thr Met Gln Asn Ala Ile Asn Gly  
 1 5 10 15

Ala Val Ser Arg Asp Ala Ser Asn Val Ser Gly Ser Leu Pro Ala Asn  
 20 25 30

Cys Ala Tyr Ser Asn Phe Gly Thr Gly Ile Asp Val Ser Ala Pro  
 35 40 45

<210> 19  
 <211> 58  
 <212> PRT  
 <213> Bacillus subtilis

<400> 19

Gly Gly Gly Ser Gly Leu Asp Glu Trp Tyr Arg Asp Met Val Asn Ala  
 1 5 10 15

Trp Arg Ala Ala Thr Asp Leu Phe Ile Pro Gly Gly Pro Gly Ser Ile  
 20 25 30

Ala Asn Pro Ala Asn Tyr Pro Phe Ser Leu Gln Gly Pro Ser Pro Tyr  
 35 40 45

Asp Glu Ile Lys Pro Glu Ile Ser Ala Pro  
 50 55

<210> 20  
 <211> 59  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 20

Gly Ser Tyr Lys Asn Met Glu Ile Asp Asp Glu Arg Phe Thr Val Glu  
 1 5 10 15

Ala Phe Arg Lys Val Val Asn Tyr Ala Arg Lys Asn Glu Ser Arg Asp  
 20 25 30

Ile Ser Thr Gly Asn Glu Lys His Ile Pro Gly Gly Leu Glu Tyr Ser  
 35 40 45

Asn Tyr Gly Ser Asn Val Ser Ile Tyr Gly Pro  
 50 55

<210> 21  
 <211> 68  
 <212> PRT  
 <213> Staphylococcus epidermidis

<400> 21

Gly Asn Tyr Leu Ile Arg Asp Asp Glu Lys Val Asp Tyr Asp Ala Leu  
 1 5 10 15

Gln Lys Ala Ile Asn Tyr Ala Gln Lys Lys Asp Gly Ile Asn Val Lys  
 20 25 30

Lys Val Lys Glu Ile Asn Lys Lys Arg Thr Ser Lys Lys Val Tyr Asp  
 35 40 45



Ser Pro Ala Asn Leu Asn Phe Ser Asn Tyr Gly Asn Asn Phe Ile Asp  
50 55 60

Leu Met Thr Ile  
65

<210> 22  
<211> 71  
<212> PRT  
<213> Streptococcus pyrogenes

<400> 22

Gly Asn Ala Ala Leu Ala Tyr Ala Asn Leu Pro Asp Glu Thr Lys Lys  
1 5 10 15

Ala Phe Asp Tyr Ala Lys Ser Lys Asp Ser Ser Phe Gly Gly Lys Thr  
20 25 30

Arg Leu Pro Leu Ala Asp His Pro Asp Tyr Gly Val Val Gly Thr Pro  
35 40 45

Ala Ala Ala Asp Phe Ser Ser Trp Gly Leu Thr Ala Asp Gly Asn Ile  
50 55 60

Lys Pro Asp Ile Ala Ala Pro  
65 70

<210> 23  
<211> 73  
<212> PRT  
<213> Lactococcus lactis SK11

<400> 23

Gly Ser Asn Ser Gly Asn Gln Thr Leu Glu Asp Pro Glu Leu Ala Ala  
1 5 10 15

Val Gln Asn Ala Asn Glu Ser Ser Gly Thr Ser Gly Ser Ala Thr Glu  
20 25 30

Gly Val Asn Lys Asp Tyr Tyr Gly Leu Gln Asp Asn Glu Met Val Gly  
35 40 45

Ser Pro Gly Thr Ser Arg Phe Thr Ser Tyr Gly Pro Val Ser Asn Leu  
50 55 60

Ser Phe Lys Pro Asp Ile Thr Ala Pro  
65 70

<210> 24  
<211> 63  
<212> PRT  
<213> *Serratia marcescens*

<400> 24

Gly Ile Ala Pro Asp Gln Pro Val Pro Thr Gly Gly His Ser Ala Met  
1 5 10 15

Ser Thr Leu Leu Arg Ala Ala Arg His Tyr Asn Asn Tyr Asn Ile Pro  
20 25 30

Glu Ala Gln Lys Ser Leu Pro Tyr Ala Phe Pro Asp Val Leu Asn Ser  
35 40 45

Ser Thr Ser Cys Gly Gln Thr Ala Ser Tyr Cys Val Ser Ala Pro  
50 55 60

<210> 25  
<211> 54  
<212> PRT  
<213> *Anabaena variabilis*

<400> 25

Gly Pro Pro Asp Gly Lys Gln Lys Val Pro Leu Pro Asp Ser Thr Arg  
1 5 10 15

Leu Ala Met Asp Tyr Ala Ile Asn Lys Gly Gly Asn Glu Ser Val Asp  
20 25 30

Asn Asp Gly Tyr Ala Ser Tyr Glu Lys Tyr Ser Asp Phe Gly Thr Ala  
35 40 45

Val Trp Cys Ala Phe Pro  
50

<210> 26  
<211> 58  
<212> PRT  
<213> Mouse

<400> 26

Gly Pro Asn Asp Asp Gly Lys Thr Val Glu Gly Pro Gly Arg Leu Ala  
1 5 10 15

Gln Lys Ala Phe Glu Tyr Gly Val Lys Gln Gly Gly Gly Arg Gln Gly  
20 25 30

Asp Asn Cys Asp Cys Asp Gly Tyr Thr Asp Ser Ile Tyr Tyr Ala Glu  
35 40 45

Lys Cys Ser Ser Thr Leu Ala Thr Ser Tyr  
50 55

<210> 27

<211> 57

<212> PRT

<213> Human (also mouse)

<400> 27

Gly Pro Thr Asp Asn Gly Lys Thr Val Asp Gly Pro Arg Asp Val Thr  
1 5 10 15

Leu Gln Ala Met Ala Asp Gly Val Asn Lys Gly Gly Gly Ser Tyr Asp  
20 25 30

Asp Cys Asn Cys Asp Gly Tyr Ala Ser Ser Met Trp Tyr Asp Glu Ser  
35 40 45

Cys Ser Ser Thr Leu Ala Ser Thr Phe  
50 55

<210> 28

<211> 58

<212> PRT

<213> Human (also rat, mouse)

<400> 28

Gly Pro Glu Asp Asp Gly Lys Thr Val Asp Gly Pro Ala Arg Leu Ala  
1 5 10 15

Glu Glu Ala Phe Phe Arg Gly Val Ser Gln Gly Gly Gly Arg Glu His  
20 25 30

Asp Ser Cys Asn Cys Asp Gly Tyr Thr Asn Ser Ile Tyr Tyr Ser Glu

35

40

45

Ala Cys Ser Ser Thr Leu Ala Thr Thr Tyr  
50 55

<210> 29  
<211> 58  
<212> PRT  
<213> Drosophila

<400> 29

Gly Pro Asp Asp Asp Gly Lys Thr Val Asp Gly Pro Gly Glu Leu Ala  
1 5 10 15

Ser Arg Ala Phe Ile Glu Gly Thr Thr Lys Gly Gly Gly Arg Glu Gln  
20 25 30

Asp Asn Cys Asn Cys Asp Gly Tyr Thr Asn Ser Ile Trp Tyr Ser Glu  
35 40 45

Lys Cys Ser Ser Thr Leu Ala Thr Thr Tyr  
50 55

<210> 30  
<211> 58  
<212> PRT  
<213> Kluyveromyces lactis

<400> 30

Gly Pro Ser Asp Asp Gly Lys Thr Met Gln Ala Pro Asp Thr Leu Val  
1 5 10 15

Lys Lys Ala Ile Ile Lys Gly Val Thr Glu Gly Gly Gly Met Phe Gly  
20 25 30

Asp Ser Cys Asn Phe Asp Gly Tyr Thr Asn Ser Ile Phe Tyr Ser Glu  
35 40 45

Ser Cys Ser Ala Val Met Val Val Thr Tyr  
50 55

<210> 31  
<211> 58  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 31

Gly Pro Ala Asp Asp Gly Arg His Leu Gln Gly Pro Ser Asp Leu Val  
1 5 10 15

Lys Lys Ala Leu Val Lys Gly Val Thr Glu Gly Gly Gly Thr Arg Gly  
20 25 30

Asp Asn Cys Asn Tyr Asp Gly Tyr Thr Asn Ser Ile Tyr Tyr Ser Glu  
35 40 45

Gly Cys Ser Ala Val Met Ala Val Thr Tyr  
50 55

<210> 32

<211> 45

<212> PRT

<213> *Vibrio alginolyticus*

<400> 32

Gly Gly Gly Gln Ser Val Ala Leu Asp Ser Ala Val Gln Ser Ala Val  
1 5 10 15

Gln Ser Ser Asn Ala Asp Ala Cys Asn Tyr Ser Pro Ala Arg Val Ala  
20 25 30

Phe Ser Asn Trp Gly Ser Cys Val Asp Val Phe Ala Pro  
35 40 45

<210> 33

<211> 45

<212> PRT

<213> *Thermus rT41A*

<400> 33

Gly Gly Gly Ala Ser Thr Ala Leu Asp Thr Ala Val Met Asn Ala Ile  
1 5 10 15

Asn Ala Asp Asn Arg Asp Ala Cys Phe Tyr Ser Pro Ala Arg Val Thr  
20 25 30

Phe Ser Asn Tyr Gly Arg Cys Leu Asp Leu Phe Ala Pro  
35 40 45

<210> 34  
<211> 45  
<212> PRT  
<213> Thermus aquaticus YT-1

<400> 34

Gly Gly Gly Val Ser Thr Ala Leu Asp Asn Ala Val Lys Asn Ser Ile  
1 5 10 15

Ala Ala Asp Asn Ala Asn Ala Cys Asn Tyr Ser Pro Ala Arg Val Ala  
20 25 30

Phe Ser Asn Tyr Gly Ser Cys Val Asp Leu Phe Ala Pro  
35 40 45

<210> 35  
<211> 45  
<212> PRT  
<213> Tritirachium album Limber

<400> 35

Gly Gly Gly Tyr Ser Ser Ser Val Asn Ser Ala Ala Ala Arg Leu Gln  
1 5 10 15

Ser Ser Asn Asn Ala Asp Ala Arg Asn Tyr Ser Pro Ala Ser Glu Pro  
20 25 30

Phe Ser Asn Tyr Gly Ser Val Leu Asp Ile Phe Gly Pro  
35 40 45

<210> 36  
<211> 45  
<212> PRT  
<213> Tritirachium album

<400> 36

Gly Gly Gly Tyr Ser Ser Ser Val Asn Ser Ala Ala Ala Asn Leu Gln  
1 5 10 15

Gln Ser Asn Asn Ala Asp Ala Arg Asn Tyr Ser Pro Ala Ser Glu Ser  
20 25 30

Phe Ser Asn Tyr Gly Ser Val Leu Asp Ile Phe Ala Pro  
35 40 45

<210> 37  
<211> 45  
<212> PRT  
<213> Tritirachium album

<400> 37

Gly Gly Pro Ser Ser Ser Ala Val Asn Arg Ala Ala Ala Glu Ile Thr  
1 5 10 15

Ser Ala Glu Ala Thr Asp Ala Ser Ser Ser Ser Pro Ala Ser Glu Glu  
20 25 30

Tyr Ser Asn Phe Gly Ser Val Val Asp Leu Leu Ala Pro  
35 40 45

<210> 38  
<211> 45  
<212> PRT  
<213> Acremonium chrysogenum

<400> 38

Gly Gly Gly Tyr Ser Ser Ala Phe Asn Asn Ala Val Asn Thr Ala Tyr  
1 5 10 15

Ser Arg Asp Asn Gln Asn Ala Ala Asn Tyr Ser Pro Ala Ser Ala Ala  
20 25 30

Phe Ser Asn Tyr Gly Ser Val Leu Asp Ile Phe Ala Pro  
35 40 45

<210> 39  
<211> 45  
<212> PRT  
<213> Aspergillus oryzae

<400> 39

Gly Gly Gly Tyr Ser Lys Ala Phe Asn Asp Ala Val Glu Asn Ala Phe  
1 5 10 15

Glu Gln Glu Asn Ser Asp Ala Gly Gln Thr Ser Pro Ala Ser Ala Pro  
20 25 30

Phe Ser Asn Phe Gly Lys Val Val Asp Val Phe Ala Pro  
35 40 45

<210> 40  
 <211> 45  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 40

Gly Gly Gly Lys Ser Pro Ala Leu Asp Leu Ala Val Asn Ala Ala Val  
 1 5 10 15

Glu Val Glu Asn Gln Asp Ala Cys Asn Thr Ser Pro Ala Ser Ala Asp  
 20 25 30

Phe Ser Asn Trp Gly Lys Cys Val Asp Val Phe Ala Pro  
 35 40 45

<210> 41  
 <211> 51  
 <212> PRT  
 <213> *Yarrowia lipolytica*

<400> 41

Gly Gly Pro Lys Ser Ala Ser Gln Asp Ala Leu Trp Ser Arg Ala Thr  
 1 5 10 15

Gln Glu Asp Ala Val Asp Ala Cys Asn Asp Ser Pro Gly Asn Ile Gly  
 20 25 30

Gly Trp Ser Gly Gly Gln Gly Ser Asn Tyr Gly Thr Cys Val Asp Val  
 35 40 45

Phe Ala Pro  
 50